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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,687	01/22/2002	Thaddeus J. Gabara	Gabara 81-10-1-14	5163

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EXAMINER	
AGHDAM, FRESHTEH N	
ART UNIT	**PAPER NUMBER**
2631	

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/054,687	GABARA ET AL.	
	Examiner	Art Unit	
	Freshteh N. Aghdam	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-13 and 15-17* is/are rejected.

7)☒ Claim(s) *6 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7-13, and 15-17 rejected under 35 U.S.C. 103(a) as being unpatentable over Stephen et al (US 2002/0029362), and further in view of the instant application's disclosed prior art.

As to claims 1, 7, 9, and 16, Stephen teaches a maximum a posteriori (MAP) processor for data comprising: retrieving a first block of samples and a corresponding set of forward probabilities, wherein the block of samples correspond to states of a merged trellis, wherein the merged trellis provides combined probabilities of transition from one or more states at k-1 to current states at time k as the set of forward probabilities; and updating the set of forward probabilities of the merged trellis for the current state at time k based on the block of samples and the corresponding set of forward probabilities (Par. 71-77 and 190). Stephen is silent about the merged trellis provides combined probabilities of transition from one or more states at k-N, N is an integer greater than 1, to current states at time k as the set of forward probabilities. The instant application's disclosed prior art teaches the merged trellis provides combined

probabilities of transition from one or more states at k-N, N may be an integer greater than 1, to current states at time k as the set of forward probabilities (Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of the instant application's disclosed prior art with Stephen in order to calculate a set of forward probability values for a current state and then reduced in accordance with an a posteriori probability (APP) value based on previous state sequences for processing data input to a processor for detection and/or decoding operations.

As to claims 2, 10, and 17, Stephen teaches retrieving a second block of samples and a corresponding set of backward probabilities, wherein the samples correspond to states of the merged trellis, wherein the merged trellis provides cumulative probabilities of transition from one or more states at time k+1 to current states at time k as the set of backward probabilities; and updating the set of backward probabilities of the merged trellis for the current state at time k based on the block of samples and the corresponding set of backward probabilities, wherein the computation of the backward probabilities are similar to the forward probabilities (Par. 71-77 and 190). Stephen is silent about the merged trellis provides combined probabilities of transition from one or more states at k-N, N is an integer greater than 1, to current states at time k as the set of forward probabilities. The instant application's disclosed prior art teaches the merged trellis provides combined probabilities of transition from one or more states at k-N, N may be an integer greater than 1, to current states at time k as the set of forward probabilities (Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of the instant application's

disclosed prior art with Stephen in order to calculate a set of forward probability values for a current state and then reduced in accordance with an a posteriori probability (APP) value based on previous state sequences for processing data input to a processor for detection and/or decoding operations.

As to claims 3 and 11,Stephen teaches computing log likelihood values from the updated forward and backward probabilities and generating a data sequence for one or more blocks of samples corresponding to the log likelihood values (Par. 44 and 190).

As to claims 4 and 12, Stephen teaches storing in or reading from a memory each block of sample values for each updating (Par. 90, 164, 165, and 190).

As to claims 5 and 13, Stephen teaches updating the forward probability for a state comprises selecting the maximum combined probability for transitions to the current state (Par. 71-77 and 190).

As to claims 8 and 15, Stephen and the instant application's disclosed prior art teach all the subject matters claimed above, except for the MAP processor to be implemented by a processor in an integrated circuit. One of ordinary skill in the art would clearly recognize that employing an integrated circuit, as a processor is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to employ an integrated circuit as a processor in order to reduce the hardware usage in the system and save space.

Allowable Subject Matter

Claims 6 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 6 and 14, the prior art of record fails to teach the equation as recited in the claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Amrani et al (US 2003/0101402) see paragraphs 5-12; Jin (US 2001/0021233) see figures 3-4 and paragraphs 95-110; Lee et al (US 2003/0074628) see paragraph 11-12 and 20; and Cheng (US 6,658,071) see figure 6 and column 7-9 and 13-14.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam
November 21, 2005

KEVIN BURD
PRIMARY EXAMINER